



NEW HAMPSHIRE DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH SERVICES

**Recommendations Regarding Tuberculosis
Skin Testing In Long-Term Care Facilities**

Adopted: July 2005

Key Points

- Positive tuberculin skin tests (TST) should be reported to the New Hampshire (NH) Division of Public Health Service's Tuberculosis (TB) Program at 271-4469.
- A TST of 15 mm should be interpreted as a positive result in a NH Long Term Care Facility (LTCF) resident or employee who has no other risk factors for latent TB infection (LTBI).
- Residents and employees with a positive TST need an initial chest x-ray to rule out active TB. Further x-rays are not needed unless the individual becomes symptomatic. A symptom review can be used in place of annual TSTs or x-rays. Charts should be clearly flagged to alert caregivers of the LTBI diagnosis so that if symptoms develop, TB can be promptly diagnosed.
- Residents should have an initial two-step TST, but do not need annual testing.
- Residents do not need to be retested when they re-enter the facility after hospitalizations or community visits.
- A history of BCG vaccination is not a contraindication for a TST.

Background

Undiagnosed LTBI presents a potential threat to LTCF* personnel, residents and visitors because of the potential for development of active TB. If residents of facilities who were infected with TB at a younger age get sick with TB, they can spread it to other residents and staff. National guidelines from the Centers for Disease Control and Prevention (CDC) recommend initial two-step TSTing of new residents and employees of high-risk congregate settings and they recommend using 10 mm of induration as the cut-off point for interpreting a TST as positive in these populations. However, CDC encourages states to use local epidemiology in making state recommendations.

NH is a low incidence state for TB with a mean of 19 cases annually. Under NH law, RSA 141C, both suspect active TB and LTBI are reportable to the NH TB Program. Between 1990-1999, 5% (10) of all persons diagnosed with active TB were in a LTCF at the time of diagnosis. This included 5 in nursing homes, 1 in an alcohol facility, 1 in a drug rehab facility and 3 in other types of facilities. Eight were diagnosed with pulmonary TB, 1 with bone and 1 lymph node TB. The cases were scattered across the years as well as counties. Based upon this information, the risk of exposure to active TB in a LTCF in NH is very low.

In 2000, twenty-five LTCFs from nine of the ten NH counties completed a self-administered survey that asked about TST results of both residents and employees between 1995-1999. Not all facilities had data for all of these years. The results revealed that 0.09 % (11/11,864) residents and 0.31 % (23/7449) of employees had a positive TST. Therefore the rate of positive TSTs in residents and employees of LTCFs in NH is very low. False positive reactions to the TST are likely to occur in persons who have a low probability for LTBI. The specificity of the test can be improved by increasing the cut-off size that separates a positive from a negative result. Based upon NH epidemiology, the following recommendations are made.

Skin Testing Residents And Employees:

➤ Initial Testing

All new residents and employees should receive a baseline TST unless they have documentation of a previous positive reaction, or a history of prior TB or LTBI treatment. Two-step testing** should be used for all who have not had a documented negative TST during the preceding twelve months to detect boosting. The result of the second test should be used as a baseline. In the absence of other risk factors, a TST reaction of **15 mm** of induration or greater on the first or second test is considered a positive reaction. Note that the 15mm cutoff point is based upon NH epidemiology and is not the same as the national recommendations. It should only be used for individuals when no other risk factors for TB are identified. The result should be recorded in mm and not just as a positive or negative reaction. Erythema should not be included in measuring a TST reaction. Current CDC guidelines (attached) should be used to interpret a TST reaction based upon other risk factors (i.e. 5mm in an immunocompromised person, 10mm in a foreign-born person from a high-prevalence area of the world). A history of Bacillus of Calmette and Guérin (BCG) vaccination is not a contraindication for TSTing. **All positive TST results should be reported to the NH TB Program at 603-271-4469.**

All newly admitted residents and new employees found to have a positive TST reaction should initially receive a screening chest x-ray and a medical evaluation to rule out the presence of active TB and determine if the individual is a candidate for treatment of LTBI. If no evidence of active TB is discovered, treatment of LTBI should be considered in accordance with the American Thoracic Society (ATS)/CDC Guidelines. Treatment of LTBI is a strategy for TB elimination. ATS Guidelines recommend that a decision to do a TST is a decision to treat LTBI. Age is no longer used as a factor in determining candidates for treatment. However, in the resident population, the risk of drug-induced hepatitis from treatment of LTBI needs to be balanced with an individual's life expectancy and risk factors for developing TB as well as the risk of exposing others to TB in a congregate setting. New employees or residents with documentation of a history of TB or a previous positive TST should be evaluated for symptoms of TB (see attached Symptom Screen tool), but do not need a chest x-ray unless they have symptoms.

A diagnosis of LTBI should be prominently displayed in the resident's chart to assist in the prompt consideration of TB if pulmonary symptoms develop.

Once a TST has been interpreted as positive, it will generally remain positive even after treatment. Any resident or employee with a positive reaction to a TST who has no clinical evidence of active TB should be exempted from future testing. A symptom screen (see attached) should be documented in lieu of future TSTs and the individual should be monitored for the development of TB symptoms such as cough, chest pain, fever, weight loss and night sweats. If such symptoms develop and persist, a chest x-ray should be performed and sputum specimens sent for acid-fast bacillus (AFB) smears and cultures. Annual chest x-rays of asymptomatic persons with positive TSTs are not recommended.

➤ Repeat Testing

Employees with negative TSTs should have repeat TSTs at a frequency based upon current CDC Guidelines*** and the recommendations of the facility's Infection Control Committee. A reaction $\geq 15\text{mm}$ of induration should be interpreted as a positive TST in the absence of other risk factors. Repeat testing should be staggered throughout the year (i.e. such as by date of hire) and should not be done on all employees at the same time. This will prevent a delay in recognizing converted reactions as a result of exposure in a facility. A conversion reaction occurs when an individual converts their TST from a negative to a positive result within a two-year period of time. A conversion is a result of an exposure to TB. A TST cannot become positive from repeated TSTs. Notify the TB Program of a conversion reaction so that a staff member can provide consultation and guidance in an investigation of the potential source of the conversion. If no risk factors for exposure are identified, the TST can be repeated to verify the result.

TSTs should be provided for any TST negative residents or employees after any exposure to a case of active TB. Residents do not need TSTs every time they leave and return to the facility after hospitalization. Residents and staff members with suspect or confirmed TB should be reported to the NH TB Program so that a public health investigation can be conducted. Employees with suspect TB should be excluded from work. Individuals identified as having extensive exposure to someone with active TB should receive a baseline TST. If the initial test result is negative, a second test should be administered twelve weeks after the last exposure to a contagious case of TB.

*Long Term Care Facilities (LTCF) include nursing homes and residential care facilities.

**Two-step testing is also known as “booster testing”. This method of tuberculin skin testing is based on the existence of an immunologic booster phenomenon. This occurs when the first in a series of TSTs has a stimulus effect on subsequent tests. When an individual is infected with tubercle bacilli, (s)he develops delayed hypersensitivity to the organism. This response is what causes a positive TST. Over time, the individual’s response may wane, and a subsequent test may be negative or questionable. The antigen in a newly administered TST may stimulate the immunologic memory such that a repeat test will “boost” a reaction in an infected subject; however, in non-infected persons it will fail to induce a significant reaction. To perform two-step testing the following procedure is used: a TST is administered using 5 U.S. Tuberculin Units (TU) Purified Protein Derivative (PPD). If the test result is negative at 48 to 72 hours, the test is repeated one to three weeks later. Two-step testing enables one to differentiate between a boosted reaction and a conversion reaction.

*** The 1994 CDC Guidelines for Preventing the Transmission of TB in Health Care Facilities recommend repeat TSTing based upon the facility risk assessment. CDC issued new **draft** *Guidelines for Preventing the Transmission of TB in Health Care Settings* in early 2005 (Federal Register at www.cdc.gov/nchstp/tb) that are currently under review. If approved, retesting of employees in low risk situations will no longer be recommended. At that time, key stakeholders will be notified and these guidelines will be updated at the NH TB Program website (Public Health, Communicable Disease Control section of www.dhhs.nh.gov/DHHS/DPHS)

Targeted Tuberculin Testing and Treatment of Latent TB Infection, CDC, *MMWR* Vol.49, No. RR-6, June 9, 2000.

Rose, D.N. et al, **Interpretation of the Tuberculin TST**, 1995, J. General Internal Medicine, 10:635-642

Guidelines for Preventing the Transmission of Mycobacterium TB in Health Care Facilities, Centers for TB Control and Prevention, 1994.

Prevention and Control of TB in Facilities Providing Long-Term Care to the Elderly, CDC, *MMWR* Vol. 39, No RR-10, Pg. 7 - 20, July 13, 1990.

Table 7. Criteria for tuberculin positivity, by risk group

Reaction ≥ 5 mm of induration	Reaction 10 mm of induration	Reaction ≥ 15 mm of induration
Human immunodeficiency virus (HIV)-positive persons	Recent immigrants (i.e., within the last 5 yr) from high prevalence countries	Persons with no risk factors for TB
Recent contacts of tuberculosis (TB) case patients	Injection drug users	
Fibrotic changes on chest radiograph consistent with prior TB	Residents and employees [†] of the following high-risk congregate settings: prisons and jails, nursing homes and other long-term facilities for the elderly, hospitals and other health care facilities, residential facilities for patients with acquired immunodeficiency syndrome (AIDS), and homeless shelters	
Patients with organ transplants and other immunosuppressed patients (receiving the equivalent of 15 mg/d of prednisone for 1 mo or more)*	Mycobacteriology laboratory personnel Persons with the following clinical conditions that place them at high risk: silicosis, diabetes mellitus, chronic renal failure, some hematologic disorders (e.g., leukemias and lymphomas), other specific malignancies (e.g., carcinoma of the head or neck and lung), weight loss of $\geq 10\%$ of ideal body weight, gastrectomy, and jejunioileal bypass Children younger than 4 yr of age or infants, children, and adolescents exposed to adults at high-risk	

*Risk of TB in patients treated with corticosteroids increases with higher dose and longer duration.

[†] For persons who are otherwise at low risk and are tested at the start of employment, a reaction of ≥ 15 mm induration is considered positive.

SOURCE: Adapted from Centers for Disease Control and Prevention. Screening for tuberculosis and tuberculosis infection in high-risk populations: recommendations of the Advisory Council for the Elimination of Tuberculosis. MMWR 1995;44(No. RR-11):19–34.

Published in Targeted Tuberculin Testing and Treatment of Latent TB Infection, CDC, MMWR, Vol. 49, No. RR-6, June 9, 2000

NH Health-Care Provider Guidelines For TB Risk Factor Assessment

A risk assessment is done to assist in the interpretation of a TST. The interpretation of the TST affects treatment decisions. A history of BCG vaccination (unless given in the previous 6 months) should not influence the need for or interpretation of a test. Persons who test positive should have a chest x-ray and medical evaluation. The following questions can be used to determine the risk of exposure to TB.

Have you ever had a positive TST in the past?

☐ Yes ☐ No

Date: _____ Place: _____

If any of the following are answered "yes", evaluation for TB should be considered.

Do you have persistent (≥ 3 weeks) signs or symptoms of active TB?

☐ Yes ☐ No

Cough

Fever

Loss of appetite

Hemoptysis

Chest Pain

Overwhelming fatigue

Night sweats

Unexplained weight loss

Have you lived with or spent time with anyone who possibly has or had tuberculosis?

☐ Yes ☐ No

Were you or anyone living in your household born in or have you worked in or traveled extensively to an endemic country (e.g. Asia, Middle East, Africa, Latin American, Eastern Europe)?

☐ Yes ☐ No

TB Incidence can be found at the World Health Organization website: www.int/gtb/publications/index.htm

Do you have any medical conditions (e.g. HIV, dialysis, transplants) or are you being treated with any medications (e.g. prednisone or other steroids, cancer chemotherapy) that might affect your body's ability to fight TB (immune system)?

☐ Yes ☐ No

TUBERCULOSIS SYMPTOM REVIEW

Date: _____

Name: _____

Department: _____

For use with people who have had a positive reaction to a TST in the past. To be used to evaluate residents or staff in place of a routine TST or chest x-ray.

1. Have you developed any of the following signs/symptoms since your last review? Answering yes should prompt a medical evaluation. The NH TB Program staff is available for consultation at 271-4469.

Sign/symptom	Yes	No	Comments
Unexplained fatigue?			
Unexplained weight loss?			
Loss of appetite?			
Low-grade fever?			
Night sweats?			
Persistent cough?			
Chronic respiratory symptoms?			
Sputum production?			
Coughing up blood?			

2. When was your last chest x-ray? _____

Results: _____

3. Comments: _____

Employee Health Nurse